

Fact Sheet

Emergency Disinfection of Drinking Water

Office of Water Programs
VIRGINIA DEPARTMENT OF HEALTH
Division of Water Supply Engineering

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There are two general methods by which small quantities of water can be disinfected effectively. One method is boiling. It is the most positive method by which water can be made bacteriially safe to drink. Another method is chemical treatment. If applied with care, certain chemicals will make most waters free of harmful or pathogenic organisms.

When the home water supply system is interrupted by natural or other diasasters, limited amounts of potable water may be obtained by melting ice cubes. Water from the hot water tank can be used, but may have higher mineral concentrations and would be more suitable for washing plates and utensils.. Do not use water from the toilet tank for drinking. It is likely to be contaminated. Generally, groundwater is the preferred source of drinking water. If it is not available and surface water must be used, avoid sources containing floating material or with a dark color and/or odor.

When emergency disinfection is necessary, consider the water's physical condition. The degree of disinfection will be reduced in water that is cloudy. Filter murky or colored water through clean cloths or allow particles to settle. Draw off or decant the water from the top that will be disinfected. Store water prepared for disinfection in clean, tightly covered containers that are not subject to corrosion.

Methods of Emergency Disinfection

Boiling Boil water at a rolling **boil for one minute**. This will kill any disease-causing microorganisms present in the water. The flat taste of boiled water can be improved by pouring it back and forth from one clean container into another (called aeration); or by allowing it to stand for a few hours; or by adding a pinch of salt for each quart of water boiled. **Note: The chemical treatment methods listed are not effective in removing *Cryptosporidium*—only boiling does. Therefore, boiling water is the preferred method, especially for the immuno-compromised.**

Chemical Treatment When boiling water is not practical, chemical disinfection can be used. The two most common chemicals are chlorine and iodine.

Chlorine **Chlorine Bleach.** Common household bleach contains a chlorine compound that disinfects water. Usually the procedure to follow is written on the label. If it is not, find the percentage of available chlorine on the label and use the following dosages as a guide.

Chlorine Bleach Dosage Guide

Available chlorine*:	Drops per quart clear water:
1 %	10
4-6 %	2
7-10 %	1

*If strength is unknown, add 10 drops per quart of water. For cloudy water, double the number of drops shown.

Mix thoroughly and allow to stand for 30 minutes. The water should have a slight chlorine odor; if not, repeat the dosage and allow to stand for another 15 minutes. If the treated water has too strong a chlorine taste, it can be made more palatable by allowing the water to stand exposed to the air for a few hours or aerate using the method described above.

Granular Calcium Hypochlorite. Add and dissolve one heaping teaspoon of high-test calcium hypochlorite (approximately $\frac{1}{4}$ ounce) for each two gallons of water. This mixture produces a stock chlorine solution. To disinfect water, add the stock chlorine solution in a ratio of one part chlorine solution to 100 parts of water to be treated. This is roughly equal to adding $1\frac{1}{4}$ ounce of stock solution to each gallon of water. To remove any objectionable chlorine odor, aerate the water as previously described.

Chlorine Tablets. Chlorine tablets containing the necessary dosage for drinking water disinfection can be purchased in a commercially prepared form. These tablets are available from drug and sporting goods stores and should be used as stated in the instructions. When instructions are not available, use one tablet for each quart of water.

Iodine

Tincture of Iodine. Common household iodine from the medicine chest or first aid kit may be used to disinfect water. Add five drops of two percent (2%) United States Pharmacopeia (U.S.P.) tincture of iodine to each quart of clear water. For cloudy water, add ten drops and let the solution stand for 30 minutes.

Iodine Tablets. Commercially prepared iodine tablets containing the necessary dosage for disinfecting drinking water can be purchased at drug and sporting goods stores. Use as stated in the instructions. When instructions are not available, use one tablet for each quart of water to be purified.

Halozone

Halozone Tablets. Commercially prepared halozone tablets containing the necessary dosage for disinfecting drinking water can be purchased at drug and sporting goods stores. Use as stated in the instructions. When instructions are not available, use one tablet for each quart of water to be purified.

Water to be used for drinking, cooking, making any prepared drink, washing cuts, and brushing teeth should be disinfected properly.
